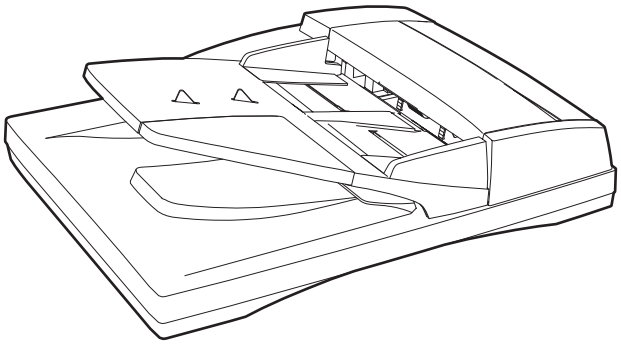
SHARP SERVICE MANUAL

CODE : 00ZARRP7//A1E



Digital copier

Reverse Single Pass Feeder (RSPF)

MODEL AR-RP7

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Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

[1] PRODUCT OUTLINE

This machine is a duplex document auto feeder attached to a digital copier.

It feeds originals automatically to allow continuous copying.

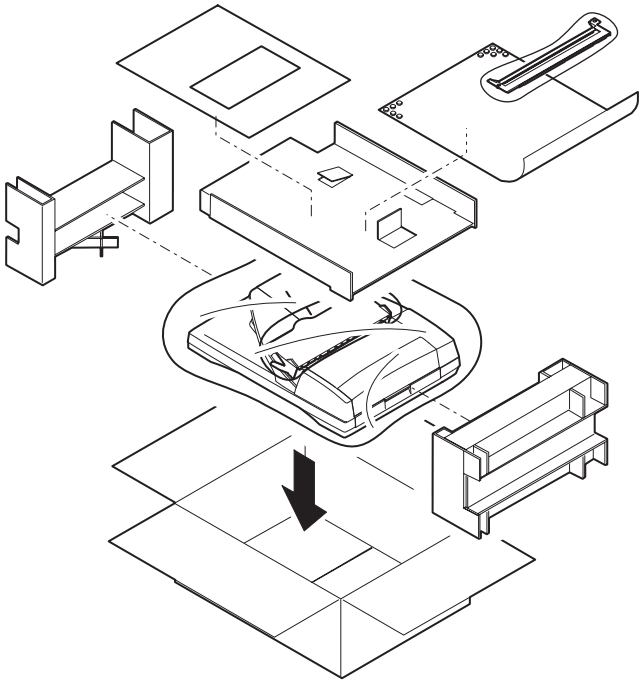
[2] SPECIFICATIONS

Document set direction	Face up
Document set position	Center reference
Document transport system	Sheet through type
Document feed sequence	Top take-up feed
Document size	AB series: A3 ~ A5 Inch series: 11 x 17 ~ 8.5 x 5.5
Document weight	Simplex: 35 ~ 128g/m^2, 9 ~ 34lbs Duplex: 52 ~ 105g/m^2, 13.9 ~ 28lbs
Document set quantity	Max. 100 sheets (90g/m^2: max. thickness 13mm)
Dimensions	586mm (W) x 457mm (D) x 140mm (H)
Weight	About 7.4 kg
Power source	Supplied from the copier. (DC 24V)
Power consumption	26.4W
Document size detection	On the document feed tray
Detection size	Japan: A3, B4, A4, A4R, B5, B5R, A5, A5R* Inch series: 11 x 17, 8.5 x 14, 8.5 x 11, 8.5 x 11R, 8.5 x 5.5**, 8.5 x 5.5R* EX AB series: A3, B4, A4, A4R, A5, A5R* * : FAX and scanner ** : Simplex copy only
Mixture of different document sizes	Mixture paper feed: Available (same width only)
Document reverse	Allowed (without 8.5 x 5.5) (Invoice size, FAX send and scanner scan are possible.)
Display section (LED)	None
Document exchange speed	S → S : 23 sheets/min, 27 sheets/min S → D : 18.4 sheets/min, 21.6 sheets/min Fax memory send/Scan function (200dpi) : 40 sheets/min (A4R)

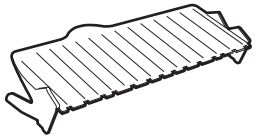
[3] UNPACKING AND INSTALLATION

1. Unpacking

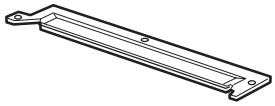
For unpacking, refer to the figure below.



2. Installation



Intermediate tray

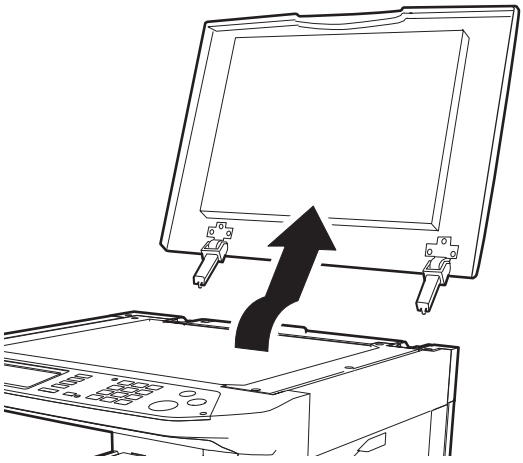


RSPF glass cover

Turn off the main switch of the copier and then remove the power plug of the copier from the outlet.

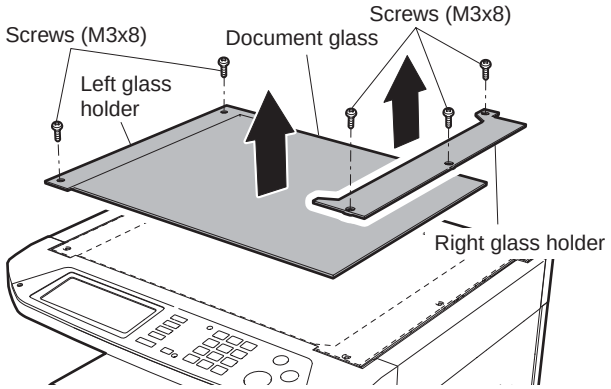
1. Remove the platen cover.

Lift the platen cover and remove it from the copier.



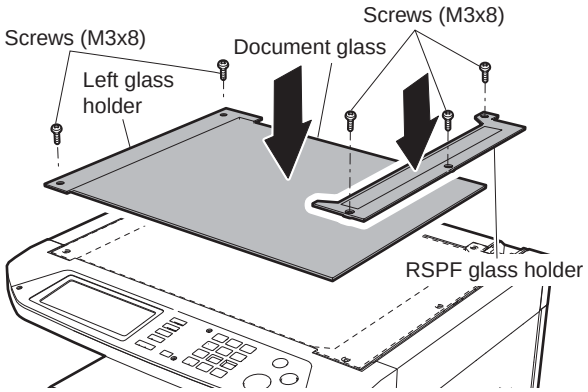
2. Remove the glass holders (right and left) and remove the document glass.

Remove the right and left glass holders and remove the document glass.
Remove the two screws (M3x8) of the left glass holder and the three screws (M3x8) of the right glass holder.



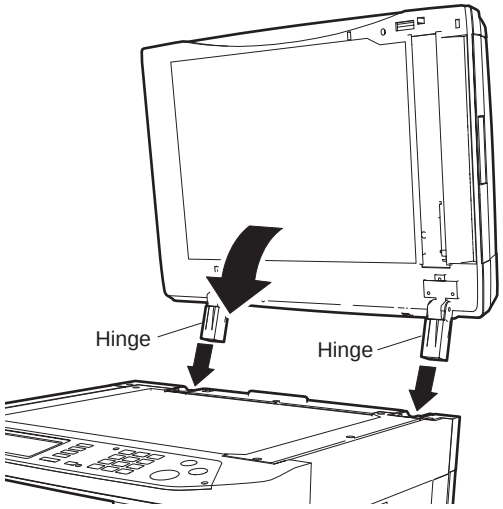
3. Attach the RSPF glass holder.

Insert the RSPF glass holder to the document glass.
Then, attach the document glass to the copier, fix the left glass holder that has been removed in step 3 using two screws (M3x8), and fix the RSPF glass using three screws (M3x8).



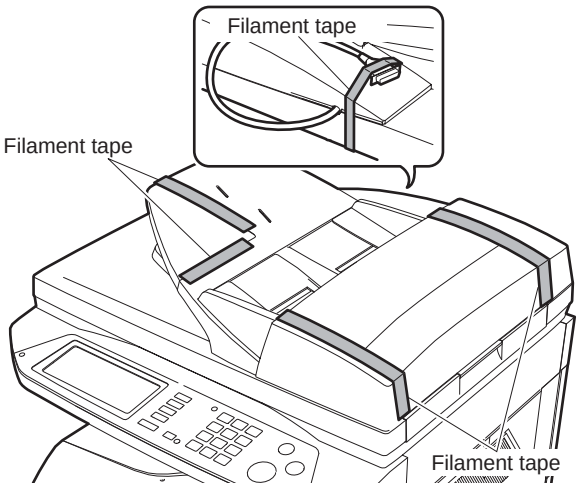
4. Attach the RSPF.

Insert the hinge portion of the RSPF to the mounting portion of the copier by holding the RSPF at an angle toward the rear side.



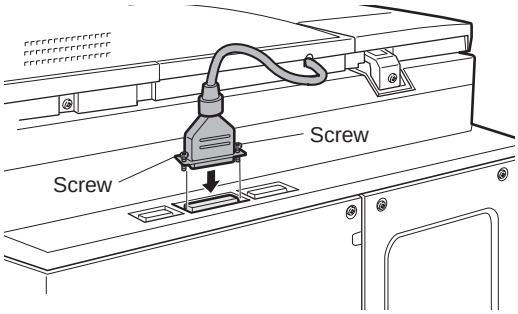
5. Remove the filament tape.

Remove the filament tape located in the positions shown in the illustration.



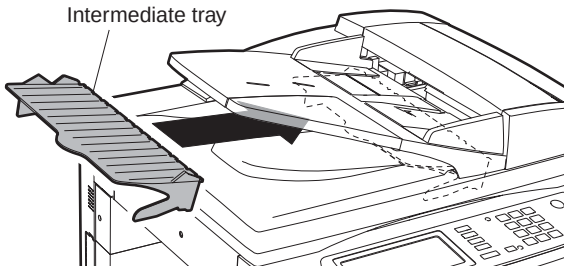
6. Connect the relay connector.

Connect the Centronics connector of the RSPF to the connector of the copier and then tighten the screws of the connector.



7. Attach the intermediate tray.

Insert the intermediate tray all the way into the RSPF.



Insert the power plug of the copier to the outlet and turn on the main switch of the copier.

8. Adjust the RSPF white correction pixel.

- Open the RSPF and execute SIM 63-7 to adjust the RSPF auto white correction pixel.

1) Open the SPF unit and press the START key.

SIMULATION 63-7
SHADING POSITION ADJUSTMENT. PRESS START.

2) Shading position adjustment is performed. (Cannot interrupt)
If the simulation is executed with the SPF unit closed, an error is resulted.

SIMULATION 63-7
SHADING POSITION ADJUSTMENT. EXECUTING...

3) [ ] indicates the order number of the pixel of the white sheet for SPF exposure correction in the SPF position.
When the adjustment is completed normally, “COMPLETE” is displayed, and data are written into the EEPROM.

SIMULATION 63-7
SHADING POSITION ADJUSTMENT. COMPLETE.
[160]

When the adjustment is completed abnormally, “ERROR” is displayed and data are not written into the EEPROM.

SIMULATION 63-7
SHADING POSITION ADJUSTMENT. ERROR.
[0]

∗The SPF white correction start pixel = Displayed pixel position -34.

9. Adjust the document guide width (Sim53-6)

Caution: If this adjustment is not performed, the document size display remains special.

1) With the document guide opened to the full, set A/3 (A/4) (WLT (LT) in the inch system) paper and adjust the guide.
Press the start key.

SIMULATION 53-6
SPF TRAY ADJUSTMENT.
WLT PAPER SET, AND PRESS START KEY.

2) Set to A4R (LTR) size, adjust the guide and press the start key.

SIMULATION 53-6
SPF TRAY ADJUSTMENT.
LTR PAPER SET, AND PRESS START KEY.

3) Fold the A/4 (LTR) paper in half, set to the A5R (Invoice R) size, adjust the guide and press the start key.

SIMULATION 53-6
SPF TRAY ADJUSTMENT.
INVR PAPER SET, AND PRESS START KEY.

4) Adjust the guide to the minimum width and press the start key.

SIMULATION 53-6
SPF TRAY ADJUSTMENT.
MIN POSITION SET, AND PRESS START KEY.

5) Make sure the indicator reads 60 before pressing the start key.

SIMULATION 53-6
SPF TRAY ADJUSTMENT. INPUT VALUE 1-99, AND PRESS START.
60

6) Make sure the indicator reads 40 before pressing the start key.

SIMULATION 53-6
SPF TRAY ADJUSTMENT. INPUT VALUE 1-99, AND PRESS START.
40

7) Make sure the document size is correctly shown in Sim2-2.

10. Check the copy magnification ratio.

- Set an original on the document glass and copy it.
Then, set an original in the document feeder tray and copy it.
- If the magnification ratio of the copy from the RSPF is different from that of the copy from the document glass, carry out adjustment referring to the service manual.

11. Check the center displacement.

- Set an original on the document glass and copy it.
Then, set an original in the document feeder tray and copy it.
- If the center of the copy image from the RSPF is different from that of the copy image from the document glass, carry out adjustment referring to the service manual.

12. Check the top end position.

- Set an original on the document glass and copy it.
Then, set an original in the document feeder tray and copy it.
- If the top end position of the copy image from the RSPF is different from that of the copy image from the document glass, carry out adjustment referring to the service manual.

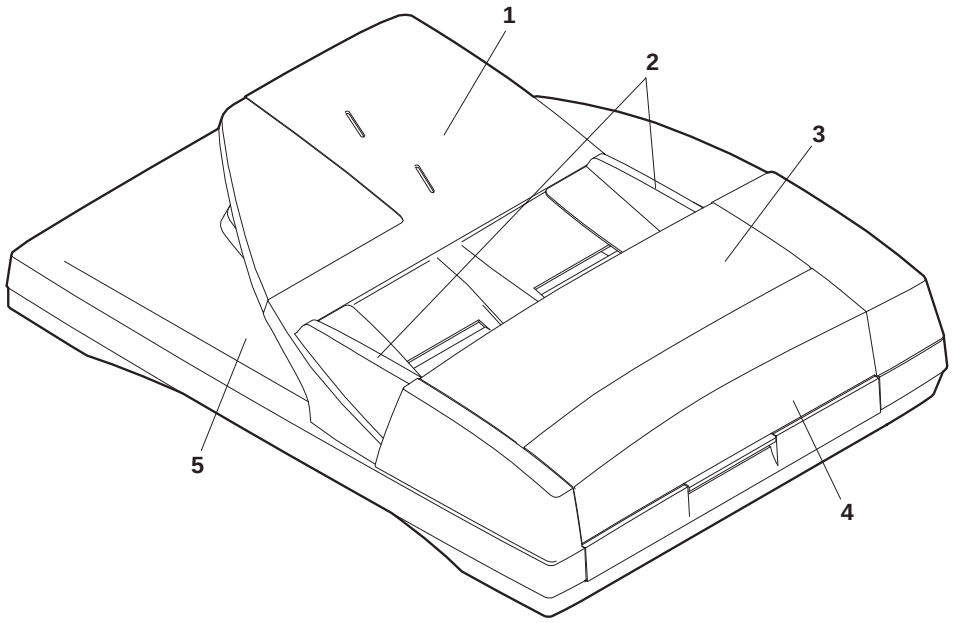
13. Check the open/close detection position.

- If the open/close detection position measured with the open/close detection position adjustment method described in the service manual does not conform to the specifications, carry out adjustment referring to the service manual.

Installation of RSPF is now complete.

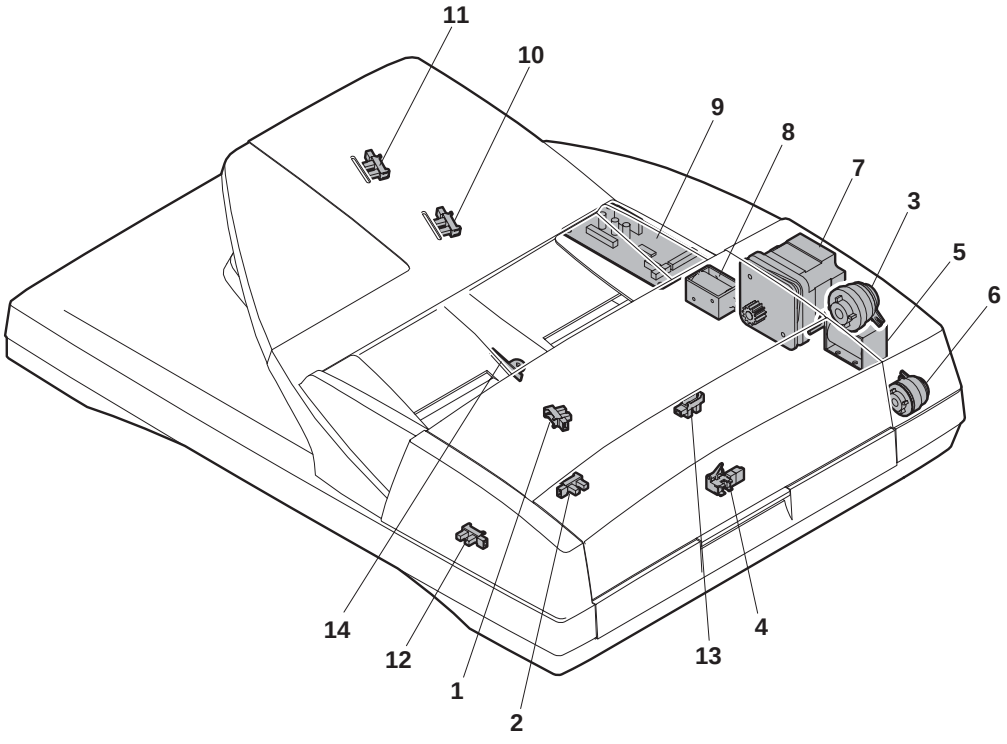
[4] EXTERNAL VIEW AND INTERNAL STRUCTURE

1. External view



No.	Name
1	Document set tray
2	Document guide
3	Document feed section cover
4	Document transport section cover
5	Document exit section

2. Internal structure

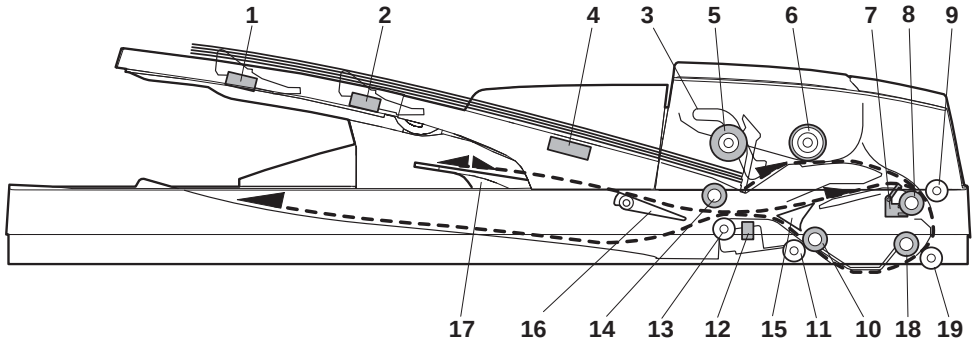


Sensor, detector, etc.

No.	Code	Name	Type	Function/Operation
1	EMPS	Document set sensor	Photo transmission	Detects presence of documents.
2	FGOD	Open/close sensor	Photo transmission	Detects open/close of the paper feed unit.
3	DFCL	Paper feed clutch	—	—
4	DFD	Paper entry sensor	Photo transmission	Detects presence of documents.
5	RSOL	Pressure release solenoid	—	—
6	CLH	Transport clutch	—	—
7	DTM	SPF motor	Stepping motor	Drives document feed on the tray, transport, and paper exit roller.
8	GSOL	Gate solenoid	—	—
9	—	Interface PWB	—	—
10	DLS1	Document length detection SW (Short)	Photo transmission	Detects the document length on the tray.
11	DLS2	Document length detection SW (Long)	Photo transmission	Detects the document length on the tray.
12	OPCLS	Book sensor	Photo transmission	Detects the SPF float.
13	RDD	Paper exit sensor	Photo transmission	Detects presence of documents.
14	SWD	Document width sensor	Volume	Detects the document width on the tray.

[5] OPEREATIONAL DESCRIPTIONS

1. Major parts of the paper feed section



No.	Part name	Operation
1	Document length sensor (L2)	Detects the document length on the tray.
2	Document length sensor (L1)	Detects the document length on the tray.
3	Document set sensor	Detects presence of documents.
4	Document width sensor	Detects the document width.
5	Pickup roller	Picks up documents.
6	Paper feed roller	Feeds and transports documents.
7	Paper entry sensor (PAPER)	Detects transport of documents.
8	PS roller	Makes synchronization between the document lead edge and the image lead edge.
9	PS follower roller	Makes synchronization between the document lead edge and the image lead edge.
10	Transport roller 2	Transports documents.
11	Transport follower roller 2	Transports documents.
12	Paper exit sensor (PO)	Detects transport of documents.
13	Paper exit follower roller	Discharges documents.
14	Paper exit roller	Discharges documents.
15	Reverse gate	Opens/closes the document reverse path.
16	Paper exit gate	Separate document exit to the intermediate or the paper exit tray.
17	Intermediate tray	Discharges documents to the intermediate tray during document reverse.
18	Transport roller 1	Transports documents.
19	Transport follower roller 1	Transports documents.

2. Out line of operations

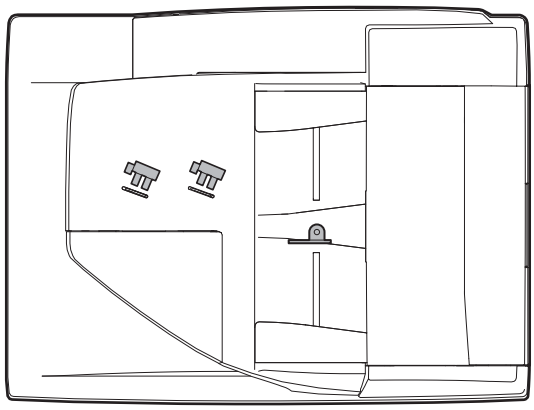
[Duplex documents]

1) Document set (Document set sensor ON)
↓
2) Document size detection (Document width sensors SWD the document width, and document length sensors L1, L2 detect the document length.)
↓
3) Copier COPY key ON
↓
4) RSPF motor ON
↓
5) DFCL ON
↓
6) Pickup roller and paper feed roller rotation
↓
7) Paper entry sensor detects the document presence.
↓
8) PS roller rotation
↓
9) Copying (Front surface of document)
↓
10) Transport roller rotation
↓
11) Paper exit roller rotation
↓
12) Paper exit gate falls down.
(Documents are discharged to the intermediate tray.)
↓
13) Reverse gate falls down.
↓
14) Paper exit roller reverse rotation
(Documents are fed to the reverse path.)
↓
15) Paper entry sensor detects document presence.
↓
16) PS roller rotation
↓
17) Copying (Back surface of document)
↓
18) Transport roller rotation
↓
19) Paper exit roller rotation
↓
20) Paper exit gate falls down
(Documents are discharged to the intermediate tray.)
↓
21) Reverse gate falls down.
↓
22) Paper exit roller reverse rotation
(Documents are fed to the reverse path.)
↓
23) Paper entry sensor detects document presence.
↓
24) PS roller rotation
↓
25) Paper exit roller rotation
↓
26) Paper exit gate lifts up.
↓
27) Documents are fed to the paper exit tray.
↓
28) Next document → (YES) → Go to 4).
↓ (NO)
29) RSPF motor OFF

3. Document size detection

1) Document size detection with the document set tray

When documents are set on the document set tray in the auto selection mode of paper/copy magnification ratio, the document size is detected and paper and the copy magnification ratio are automatically selected. When different sizes of documents are set, the max. size is detected. The document width is detected by the document width sensors (SWD), and the document length is detected by the document length sensors (L1, L2) to identify the document size. Judgment of the document size is made in a certain timing after detecting the document with the document set sensor (EMPS).



	Document set size and set direction	Document length sensor	
		L1	L2
AB series	A5	●	●
	B5	●	●
	A5R	●	●
	A4	●	●
	B5R	○	●
	A4R	○	●
	8.5” x 13”	○	○
	B4	○	○
	A3	○	○
Inch series	8.5” x 5.5”	●	●
	8.5” x 5.5”R	●	●
	11” x 8.5”	●	●
	11” x 8.5”R	○	●
	8.5” x 13”	○	○
	8.5” x 14”	○	○
	11” x 17”	○	○

Note: Detection sensor ON: ○, OFF: ●

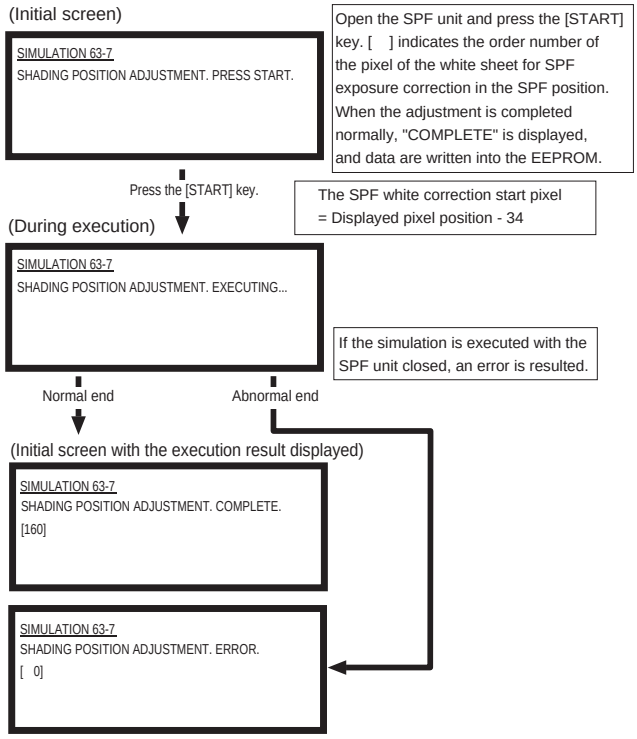
[6] ADJUSTMENTS

(1) RSPF auto white correction pixel adjustment

[Function]

The white correction start pixel position is automatically adjusted. This adjustment is performed after the lens unit is replaced.

[Operation]

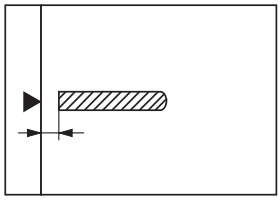

(Initial screen)
SIMULATION 63-7
SHADING POSITION ADJUSTMENT. PRESS START.
Open the SPF unit and press the [START] key. [ ] indicates the order number of the pixel of the white sheet for SPF exposure correction in the SPF position. When the adjustment is completed normally, "COMPLETE" is displayed, and data are written into the EEPROM.
Press the [START] key.
The SPF white correction start pixel = Displayed pixel position - 34
(During execution)
SIMULATION 63-7
SHADING POSITION ADJUSTMENT. EXECUTING...
If the simulation is executed with the SPF unit closed, an error is resulted.
Normal end
Abnormal end
(Initial screen with the execution result displayed)
SIMULATION 63-7
SHADING POSITION ADJUSTMENT. COMPLETE.
[160]
SIMULATION 63-7
SHADING POSITION ADJUSTMENT. ERROR.
[0]

(2) RSPF magnification ratio adjustment

Note: • When performing this adjustment, check that the CCD unit is properly installed.

• When performing this adjustment, check that the OC mode adjustment in copying is completed.

1) Place a scale on the document table as shown below, and make a normal copy to make a test chart.



Note: Since the copy is used as the test chart, place the scale in parallel to the front edge of the copy glass.

2) Set the test chart to the RSPF and make a normal copy.

3) Compare the copy and the test chart.
If an adjustment is needed, perform the following procedures.

4) Execute SIM 48-5.

5) The current correction value is displayed on the display section in two digits.

6) Enter the set value, and press the START key.
The entered correction value is stored and a copy is made.

7) Change the TEXT mode.
The TEXT lamp lights up, and the current correction value of the back surface sub scanning direction magnification ratio is displayed on the display section in two digits.

8) Enter the set value, and press the START key.
The entered correction value is stored and a copy is made.

<Adjustment specifications>

Mode	Spec	SIM	Set value	Set range
Magnification ratio adjustment	Normal: ± 1.0%	SIM 48-5 3: Surface 4: Back	Add 1: 0.1% increase Reduce 1: 0.1% decrease	1 ~ 99

(3) RSPF document off center adjustment

Note: When performing this adjustment, check that the paper off-center is properly adjusted.

1) Set the center position adjustment test chart (made by yourself) on the RSPF.

<Adjustment specifications>
Draw a line in the center of paper. (In the scanning direction)

2) Make a normal copy from the manual feed tray, and compare the copy and the test chart.
If an adjustment is required, perform the following procedures.

3) Execute SIM 50-12.

4) The current off-center adjustment value is displayed on the display section in two digits.

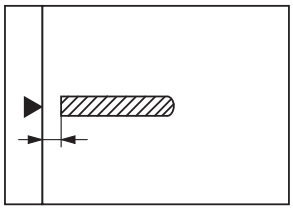
5) Enter the set value and press the START key.
The entered correction value is started and a copy is made.

<Adjustment specifications>

Mode	Specification	SIM	Set value	Set range
Document off-center	Simplex: Center ± 3.0mm Duplex: Center ± 3.5mm	SIM 50-12 2: SPF surface 4: SPF back	Add 1: 0.1mm shifted to R side. Reduce 1: 0.1mm shifted to L side.	1 ~ 99

(4) RSPF image lead edge position adjustment

1) Set a scale on the OC table as shown below.



Note: Since the printed paper is used as the test chart, place the scale in parallel to the front edge of the copy glass.

2) Make a copy, and use the copied paper as the document and make a copy from RSPF again.

3) Check the copied paper. If an adjustment is required, perform the following procedures.

4) Execute SIM 50-6.

5) Set the RSPF lead edge position set value so that the image similar to the adjusted image at the OC image lead edge position described previously is printed.

<Adjustment specifications>

Adjustment mode	SIM	Set value	Specification	Set range
Image lead edge position	SIM 50-6	1step: 0.1mm shift	Lead edge void: 1 ~ 4mm Image loss: 3mm or less	1 ~ 99

(5) SPF scan position automatic adjustment

The SPF scan position is automatically adjusted.

1) With the SPF or the OC cover open, place a black background chart on the OC glass. (The SPF standard model includes the SPF glass surface.)

   ∗ Use a black chart UKOG-0011QSZZ, or make a chart as shown below and use it.

   Chart size: 310 x 470
   Use a cutting sheet No. 791 (Black) or an equivalent for making a chart.

   Reason: To protect against erroneous detection caused by disturbed lights of fluorescent lamps, etc.

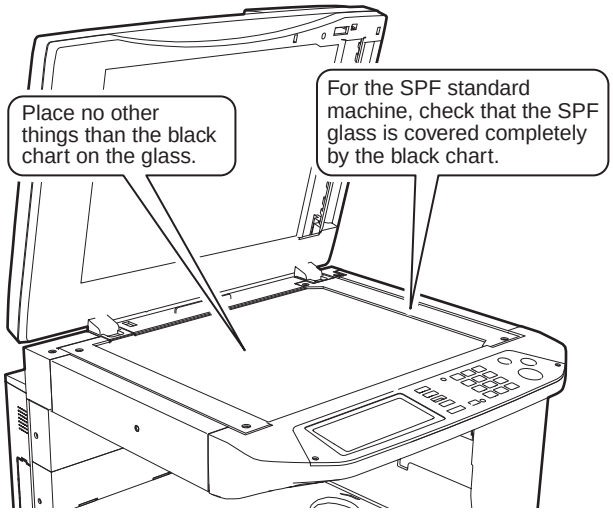
2) Enter SIM 53-08, and press the COPY button.

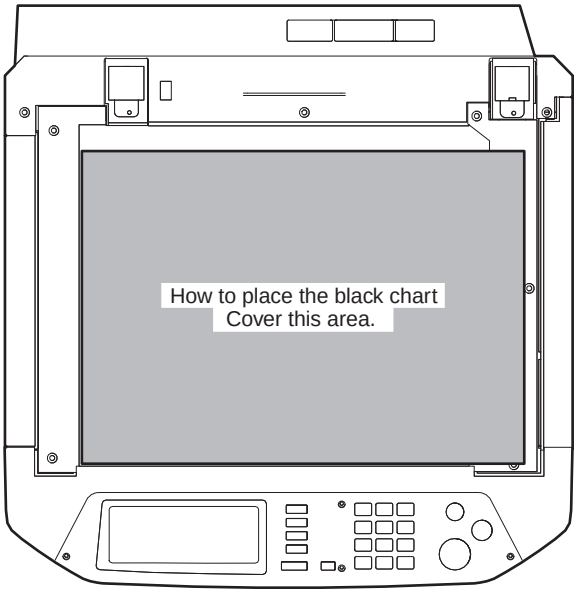
   Outline of SIM: The optical unit is moved to recognize the boundary between the OS glass and the SPF glass. The SPF scan position is automatically adjusted with the boundary position as the reference.

Caution:

- After completion of the SPF scan position automatic adjustment, perform the SPF lead edge adjustment (both surfaces).
- Place no other things than the black chart on the glass.
- Since SPF scan is made around the center in the main scanning direction, take care not to allow external lights to enter the section.

3) Check that the lead edge is not shifted. (Both surfaces)
(If the precedent lead edge adjustment was complete, the lead edge follows automatically after changing the scan position.)

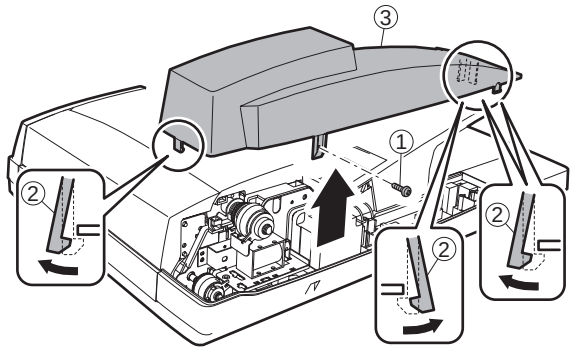

Place no other things than the black chart on the glass.
For the SPF standard machine, check that the SPF glass is covered completely by the black chart.

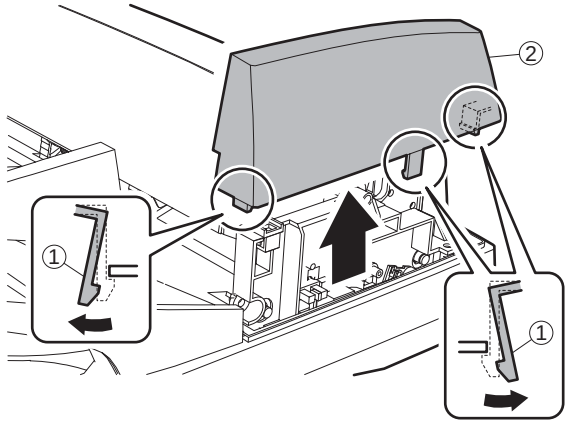


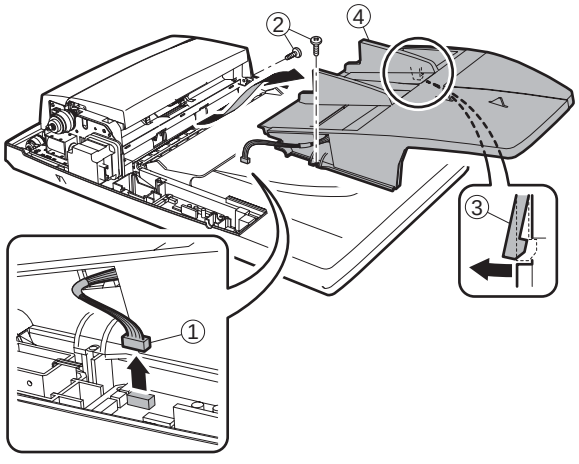
[7] DISASSEMBLY AND ASSEMBLY

1. Document tray section

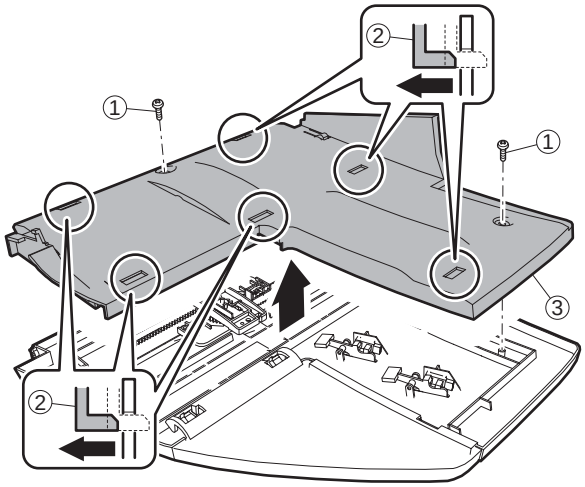
1) Document tray unit

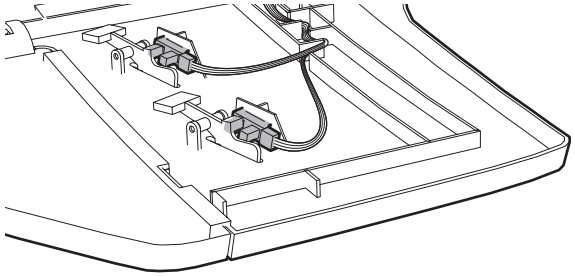




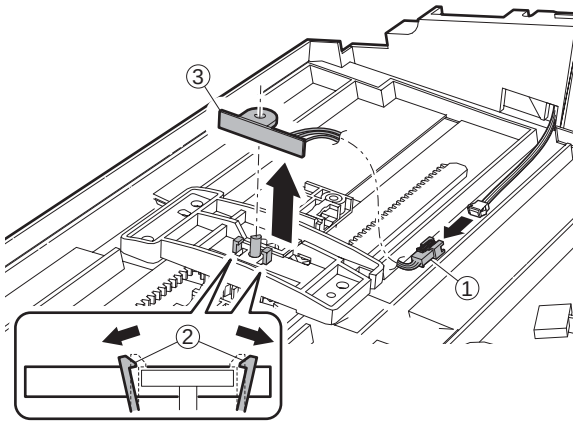


2) Document length sensor



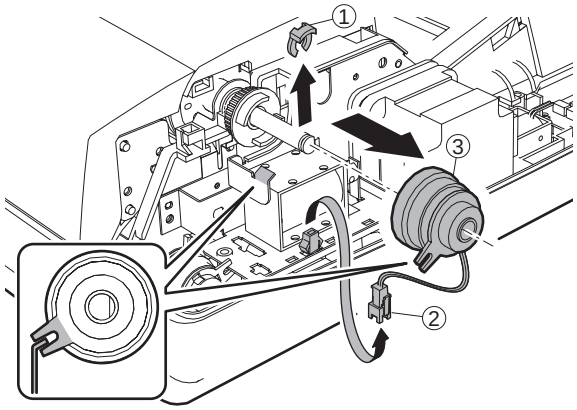


3) Document width resistor PWB

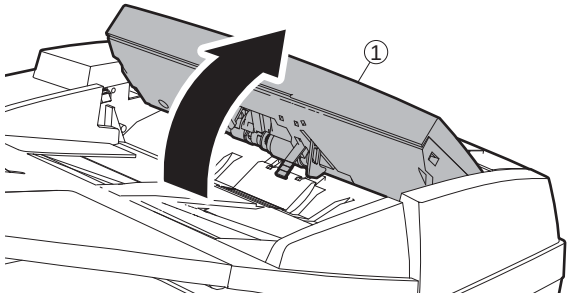


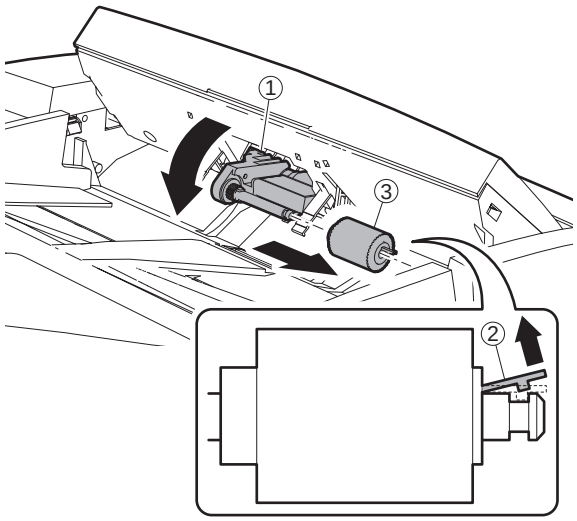
2. Paper feed unit section

1) Paper feed clutch

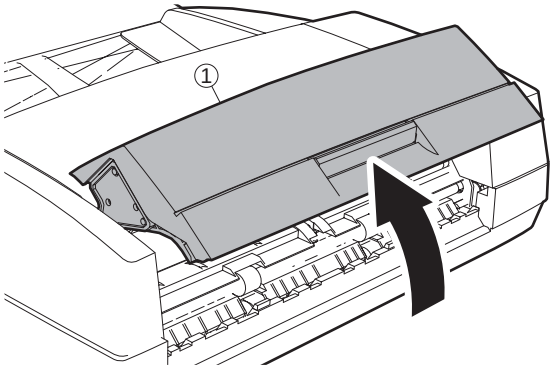


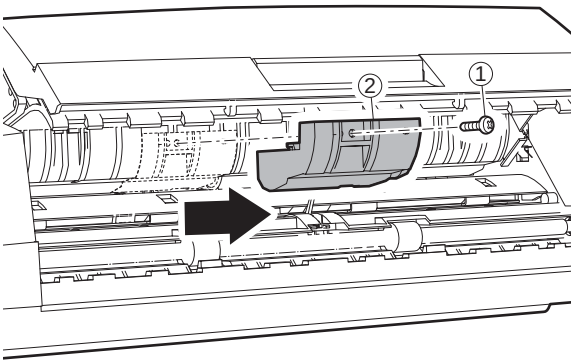
2) Pickup roller

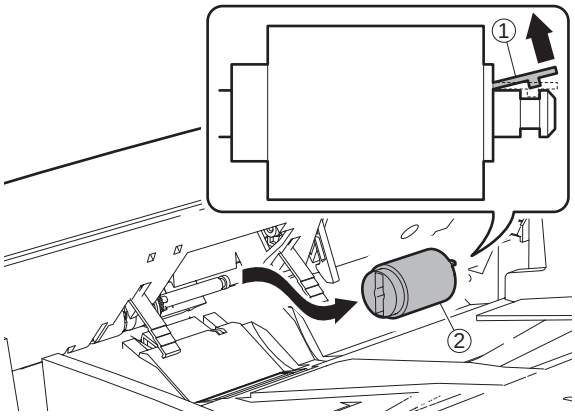




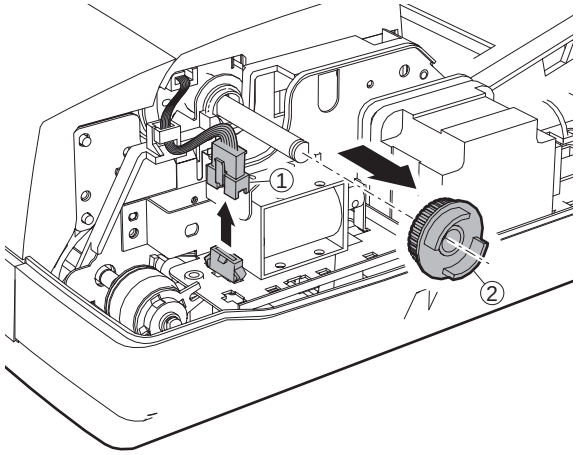
3) Paper feed roller

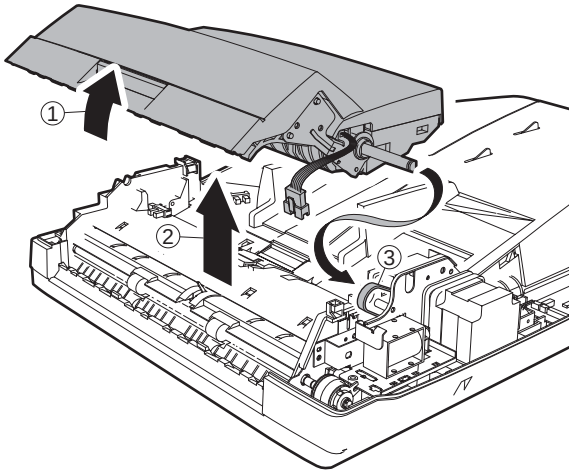




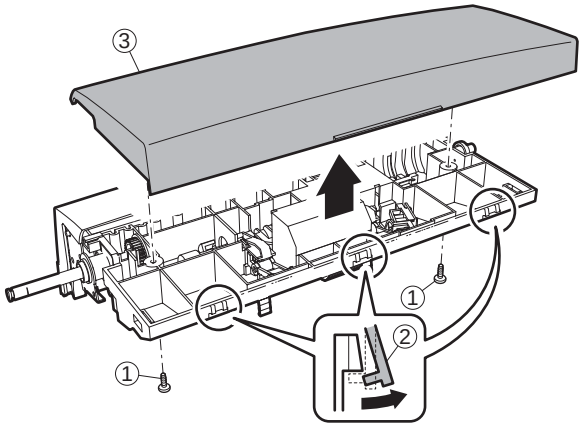


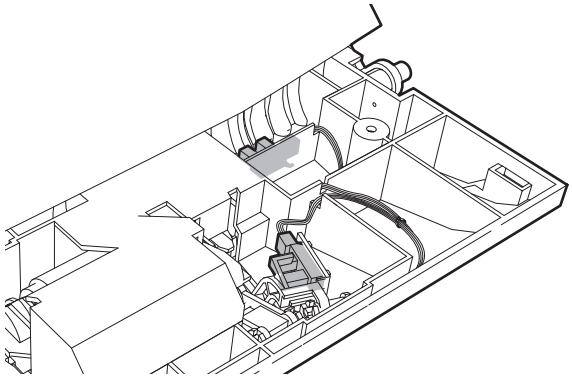
4) Paper feed unit



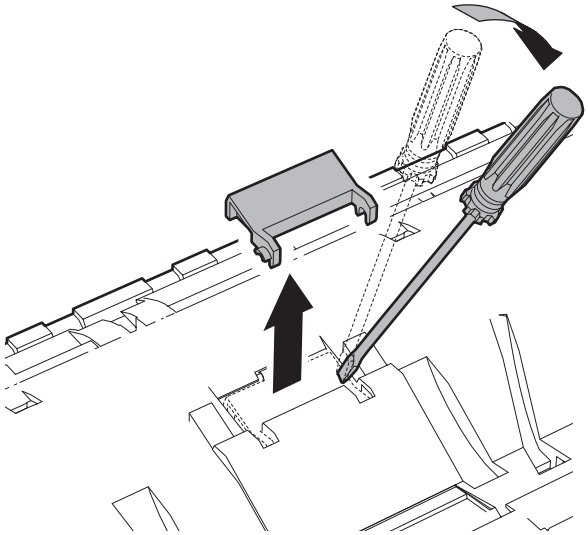


6) Sensor



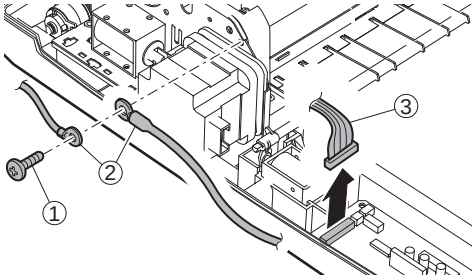


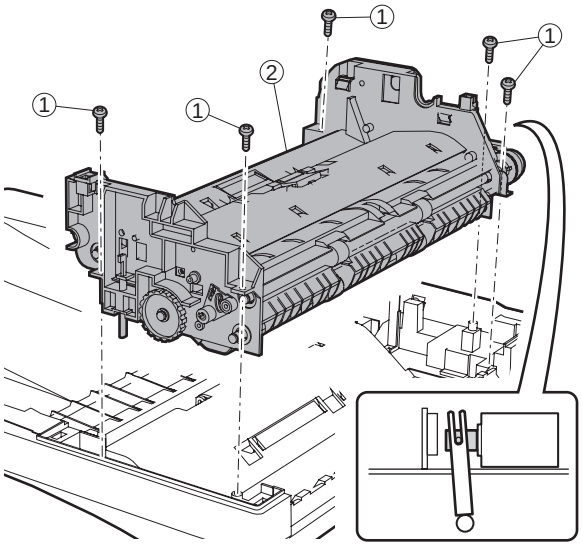
5) Separation sheet



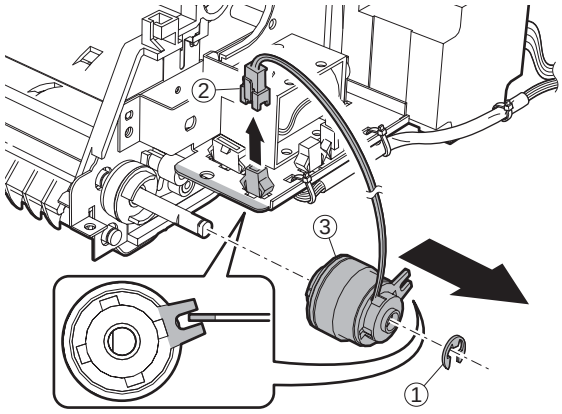
3. Transport section

1) Transport unit

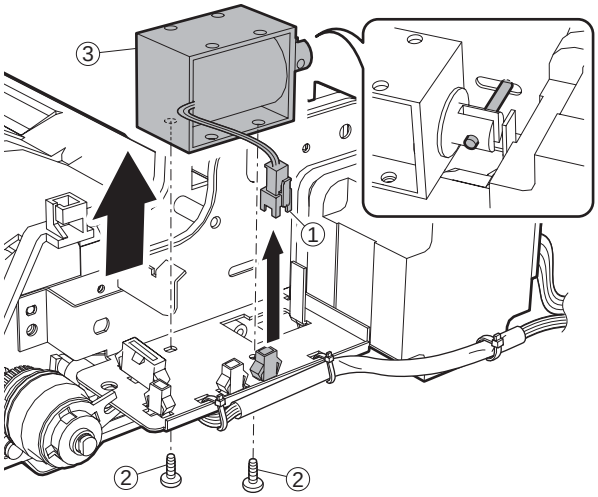




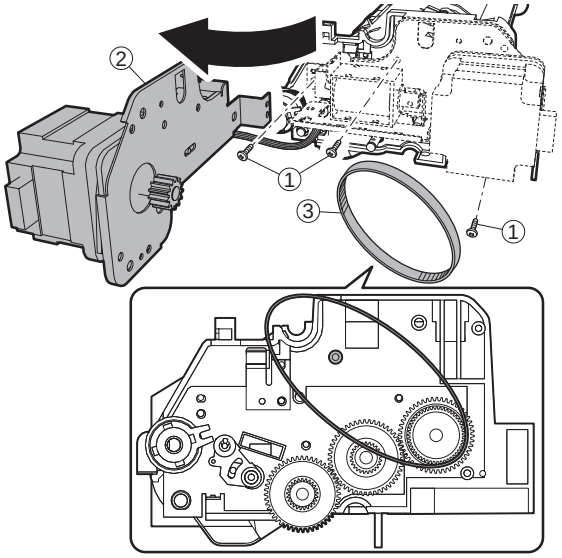
2) PS clutch

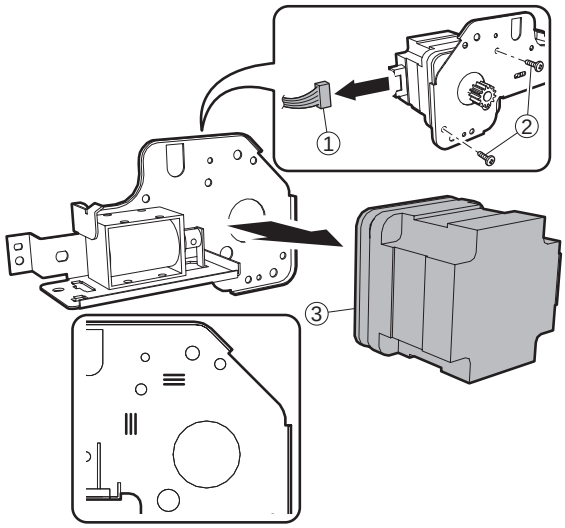


3) Pressure release solenoid



4) RSPF Motor

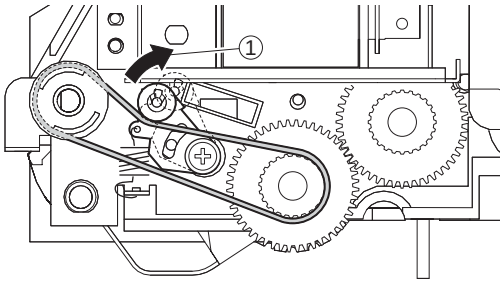


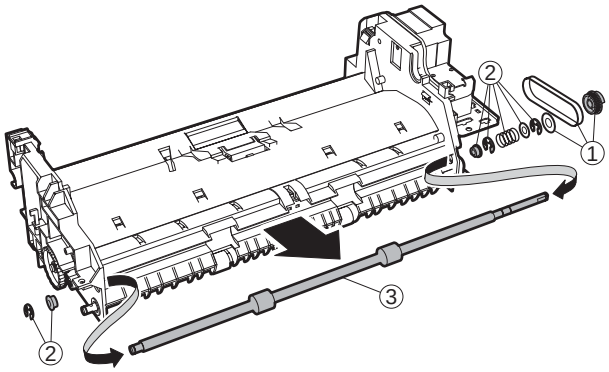


<Note for disassembling the motor>

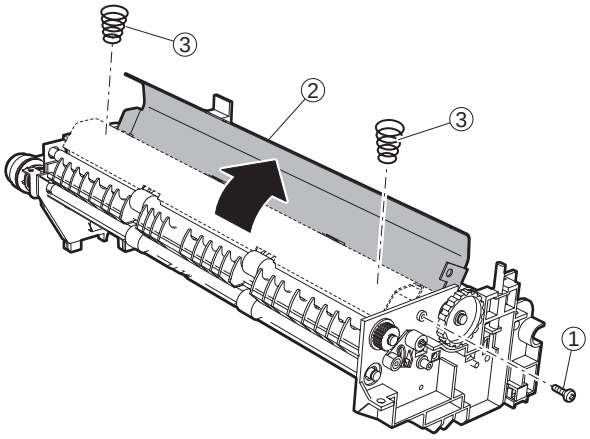
The motor is positioned by the jig. Use the mark when assembling it to the original position.

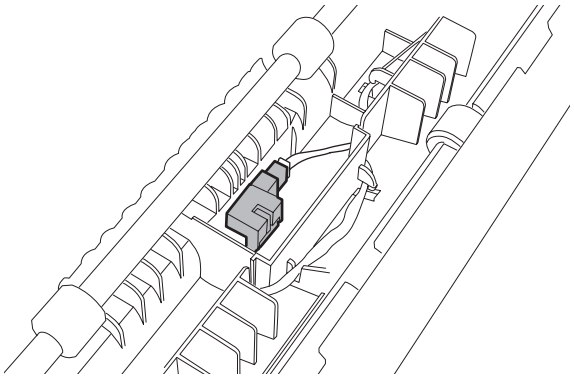
5) Transport roller



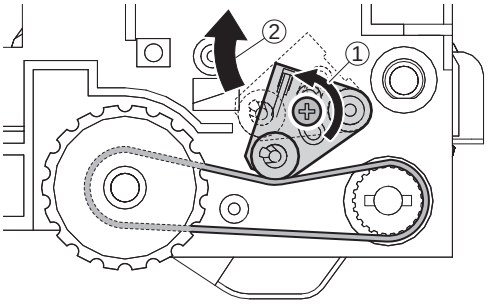


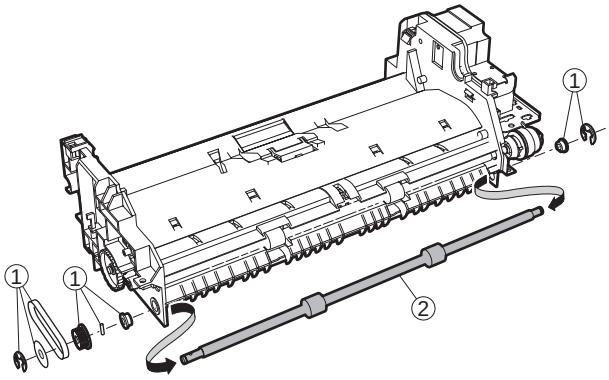
7) Sensor



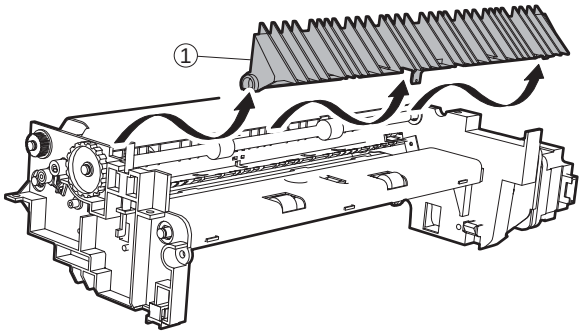


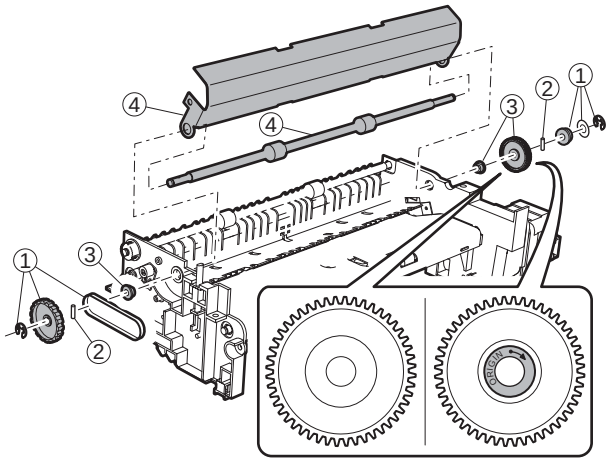
6) Roller



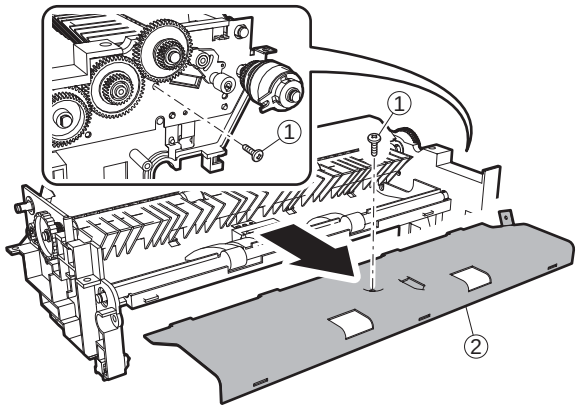


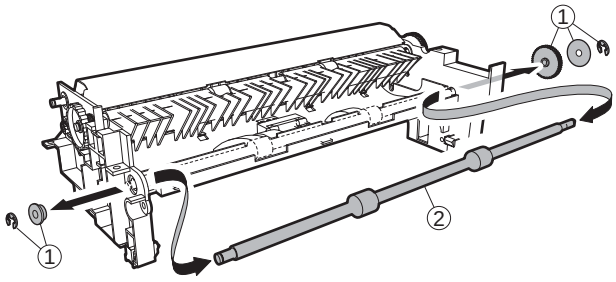
8) Roller

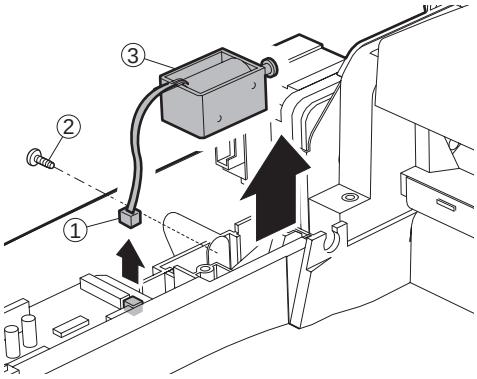




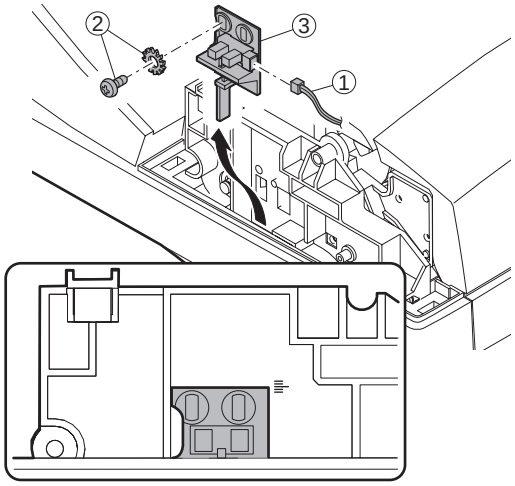
9) Roller





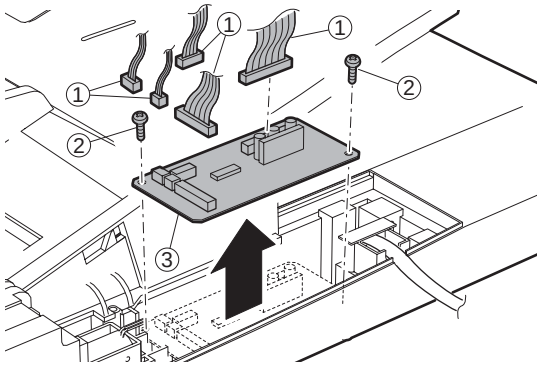


3) Book sensor

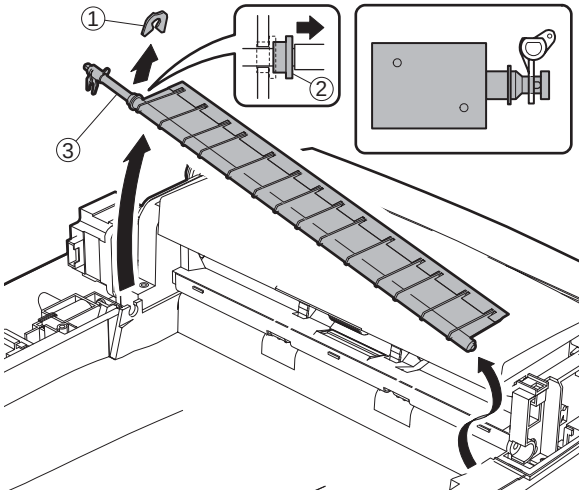


4. Base section

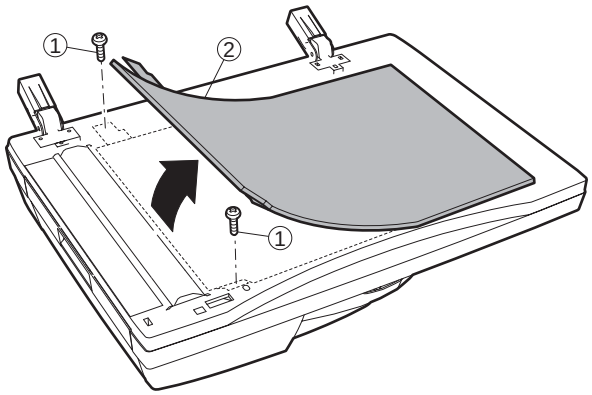
1) Interface PWB

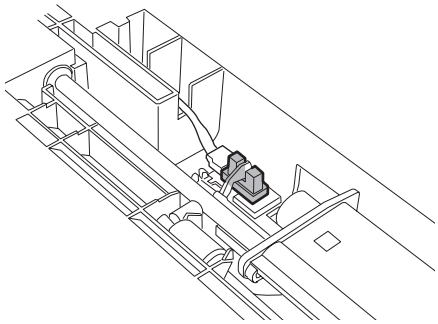


2) Solenoid



4) Sensor

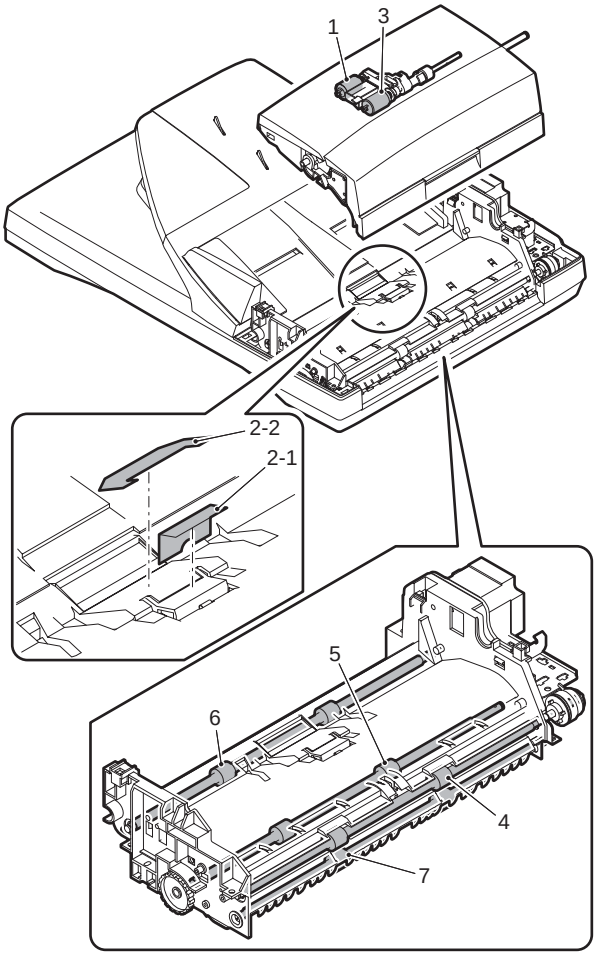




[8] MAINTENANCE

1. Maintenance parts

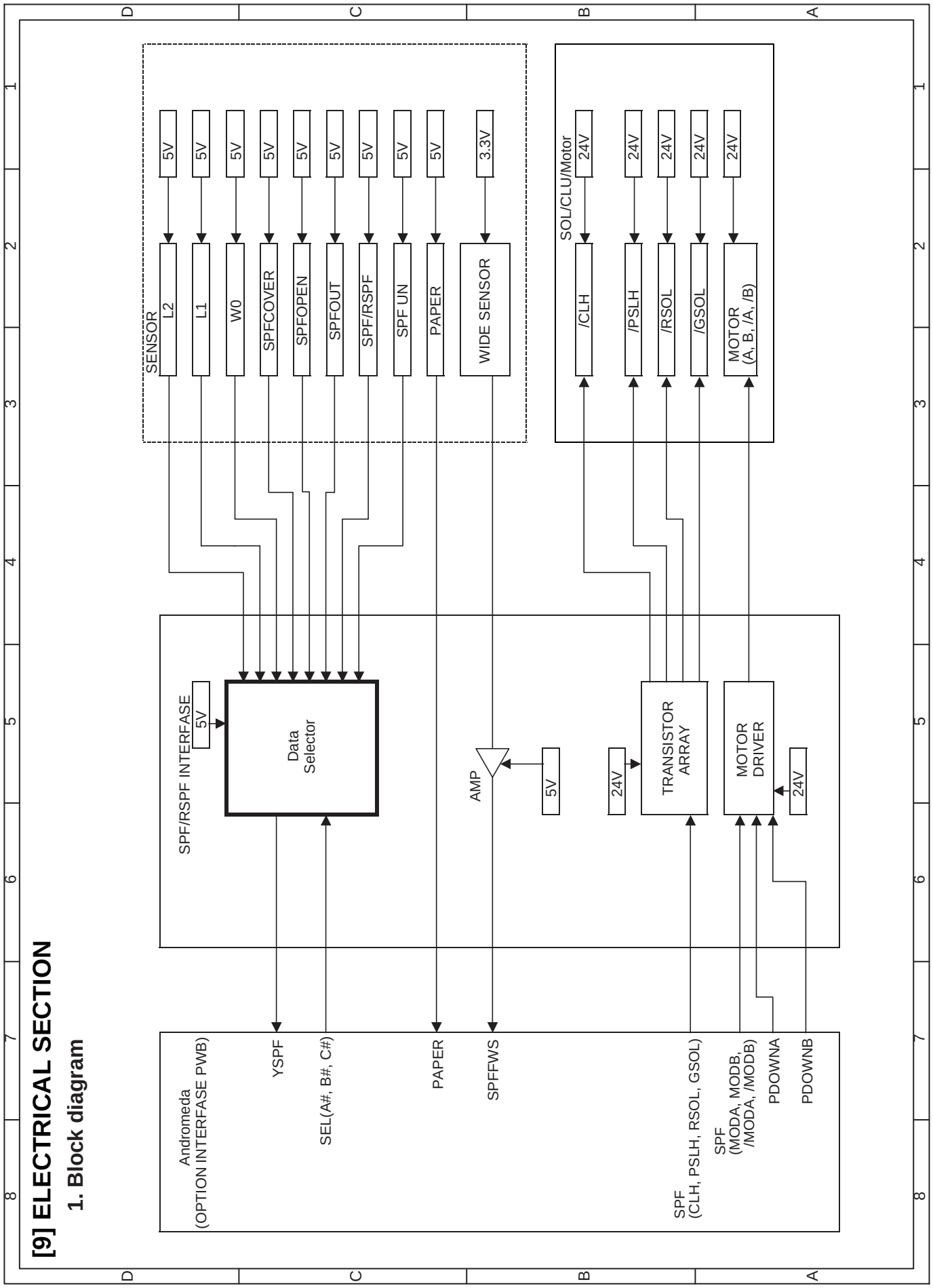
No.	Name	Work item	Service call	Remark
1	Pickup roller	Cleaning	Yes	Replace when worn down.
2-1	Separation sheet	Cleaning	Yes	Replace when worn down.
2-2	Front separation sheet	Cleaning	Yes	Replace when worn down.
3	Paper feed roller	Cleaning	Yes	Replace when worn down.
4	PS roller	Cleaning	Yes	
5	Transport roller	Cleaning	Yes	
6	Paper exit roller	Cleaning	Yes	



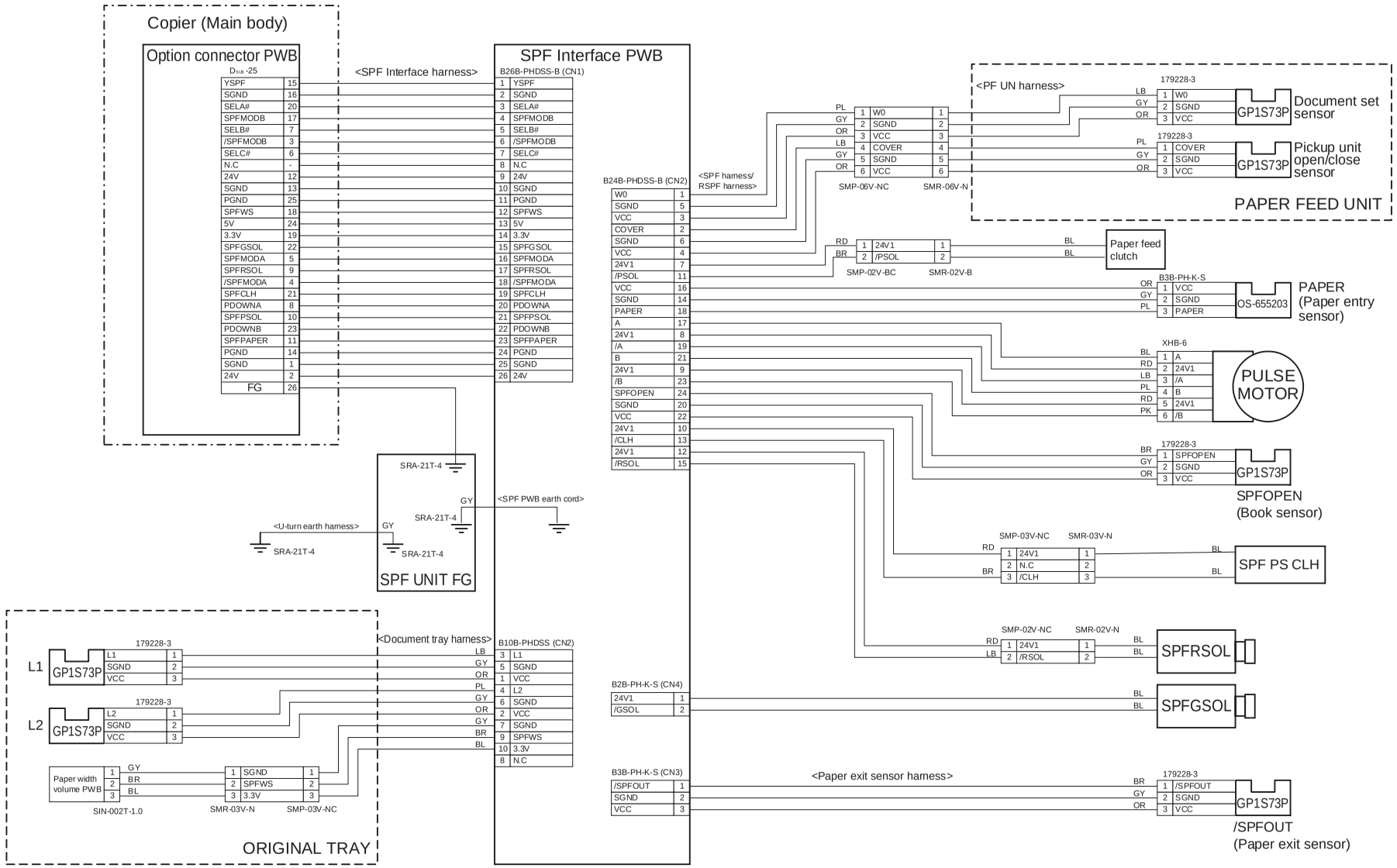
(Note) When performing maintenance, refer to [7] DISASSEMBLY AND ASSEMBLY.

[9] ELECTRICAL SECTION

1. Block diagram

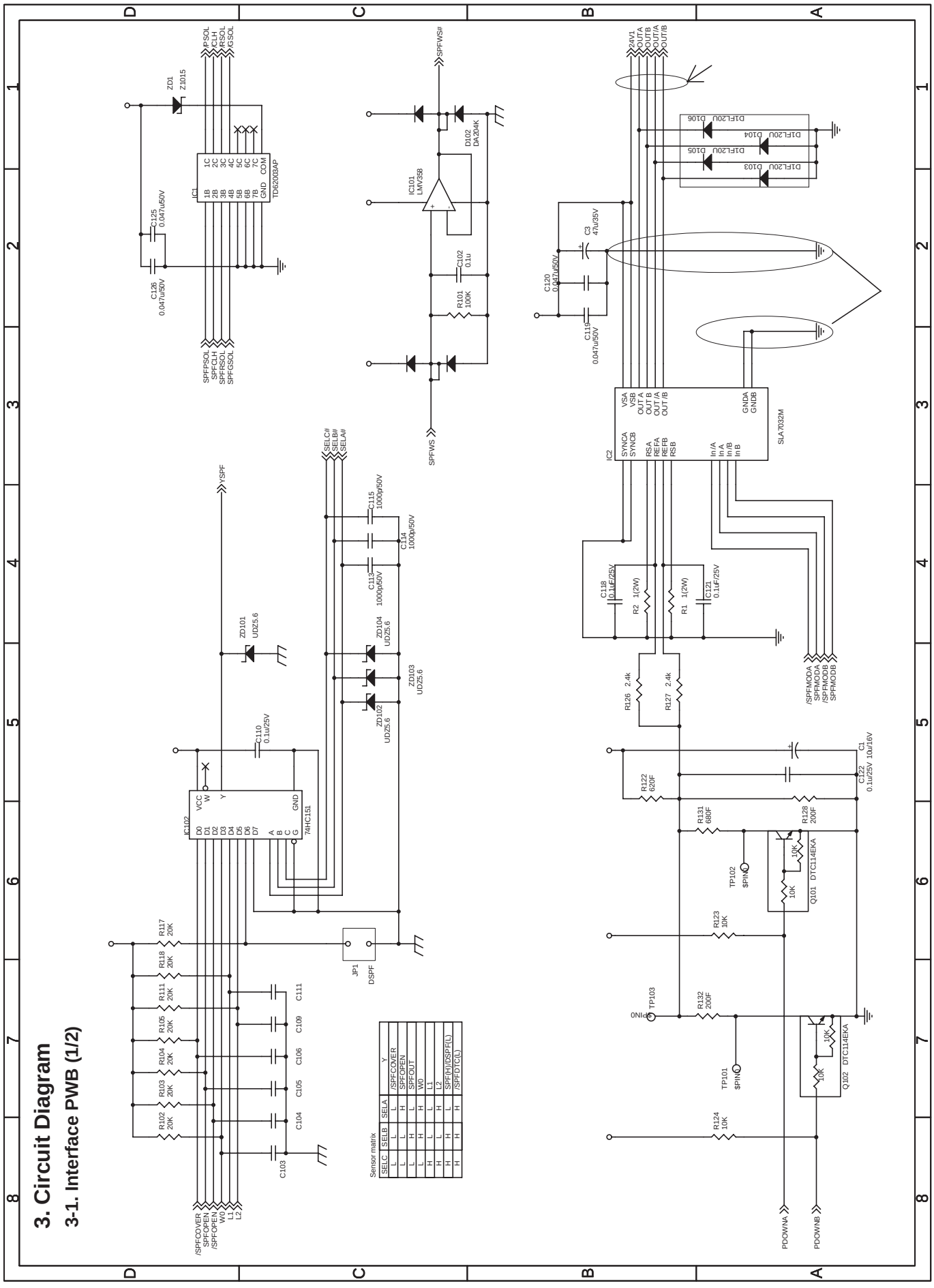


2. Actual wiring diagram

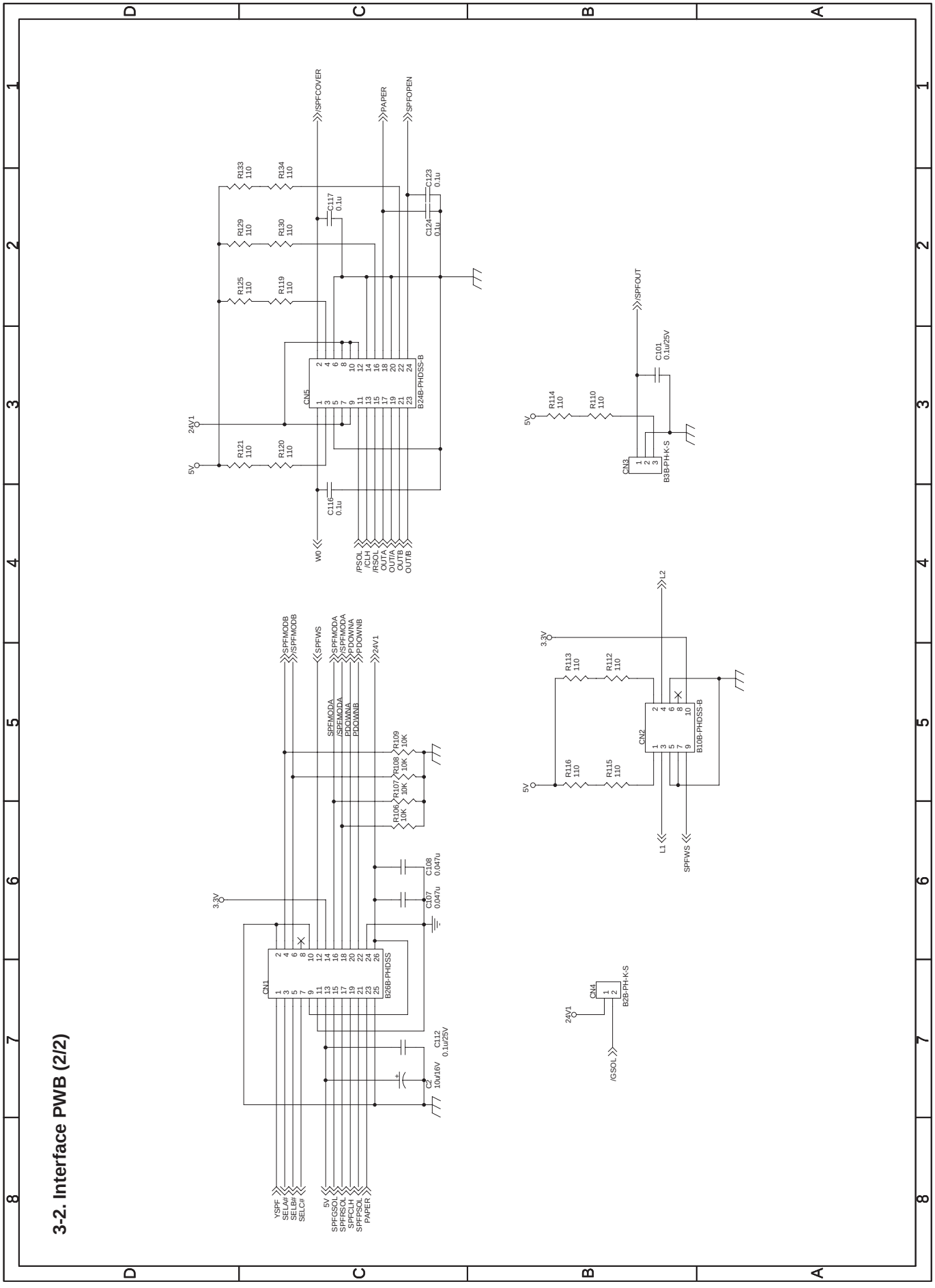


3. Circuit Diagram

3-1. Interface PWB (1/2)

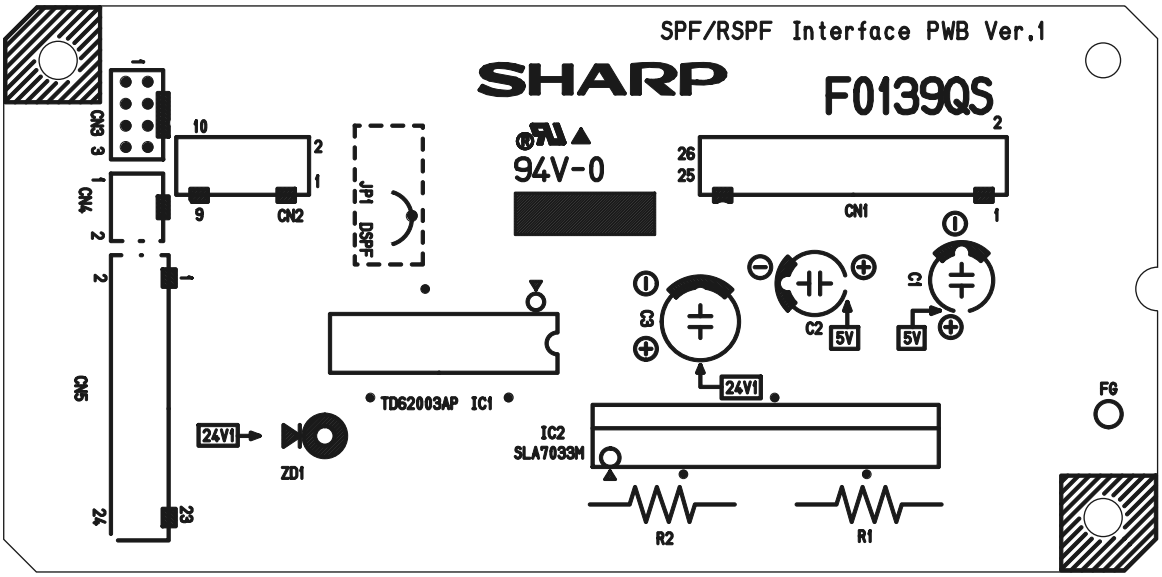


3-2. Interface PWB (2/2)



4. Parts arrangement

a. Parts surface



CN3 (B3B-PH-K-S)

1	/SPFOUT
2	SGND
3	VCC

CN4 (B2B-PH-K-S)

1	24V1
2	/GSOL

CN5 (B24B-PHDSS-B)

1	W0	13	/CLH
2	COVER	14	SGND
3	VCC	15	/RSOL
4	VCC	16	VCC
5	SGND	17	A
6	SGND	18	PAPER
7	24V1	19	/A
8	24V1	20	SGND
9	24V1	21	B
10	24V1	22	VCC
11	/PSOL	23	/B
12	24V1	24	SPFOPEN

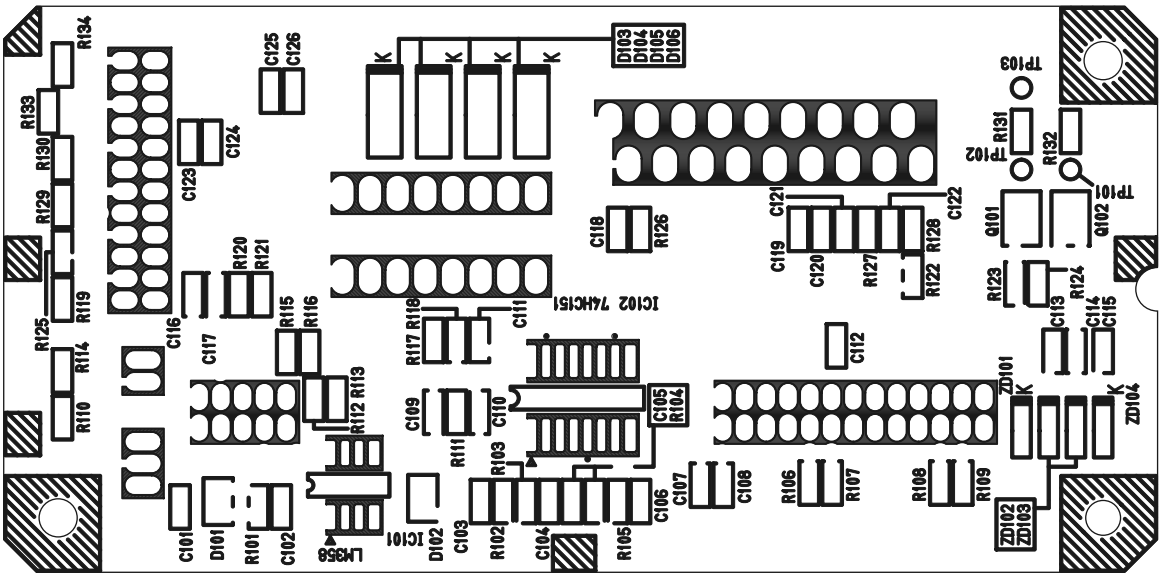
CN2 (B10B-PHDSS)

1	VCC
2	VCC
3	L1
4	L2
5	SGND
6	SGND
7	SGND
8	N.C
9	SPFWS
10	3.3V

CN1 (B26B-PHDSS-B)

1	YSPF	14	3.3V
2	SGND	15	SPFGSOL
3	SELA#	16	SPFMODA
4	SPFMODB	17	SPFRSOL
5	SELB#	18	/SPFMODA
6	/SPFMODB	19	SPFCLH
7	SELC#	20	PDOWNA
8	N.C	21	SPFPSOL
9	24V	22	PDOWNB
10	SGND	23	SPFPAPER
11	PGND	24	PGND
12	SPFWS	25	SGND
13	5V	26	24V

b. Solder surface



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SHARP CORPORATION
Digital Document Systems Group
Products Quality Assurance Department
Yamatokoriyama, Nara 639-1186, Japan
2003 September Printed in Japan ⓣ